

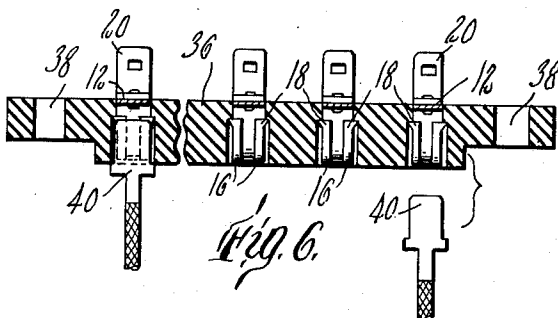
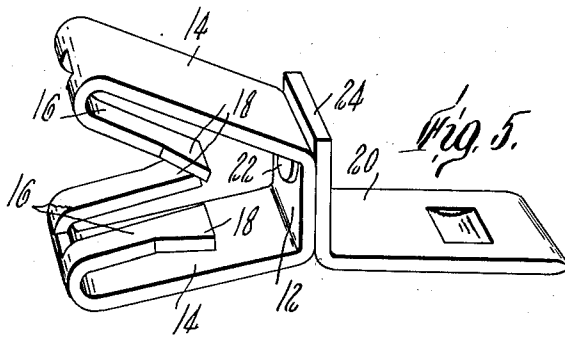
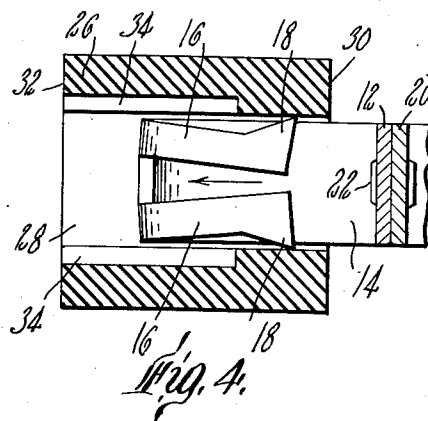
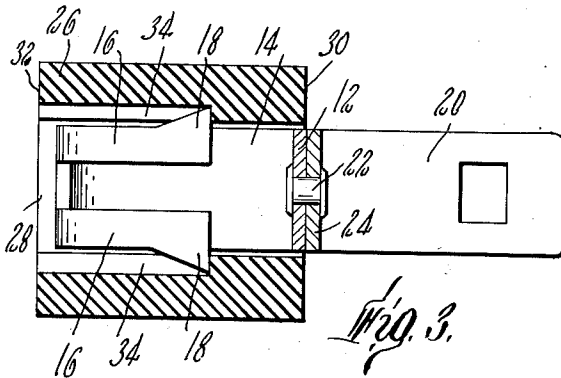
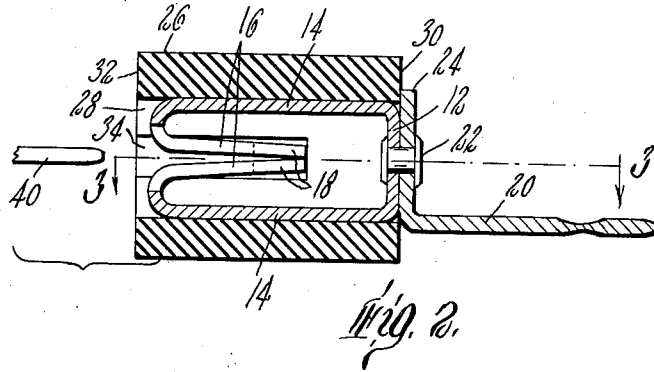
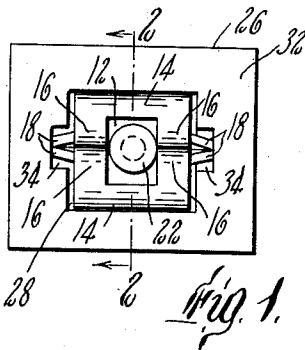
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SOCKET CONNECTOR

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2,834,951

SOCKET CONNECTOR

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6 Claims. (Cl. 339—217)

This invention relates to electrical connectors and, more particularly, to electrical socket connectors for receiving a flat spade connector to provide a quickly and easily attachable, yet permanent, electrical connection between two or more electrical lines or circuits.

It is an object of the invention to provide a novel socket connector including a sheet metal member received by and retained in an insulating sleeve in such a way that it cannot accidentally be removed from said sleeve, but nevertheless may be quickly and easily inserted into the sleeve or removed therefrom if occasion requires.

It is a particular feature of the invention that terminal means may be provided on said sheet metal members of a type which are not readily loosened or detached in service.

It is another feature of the invention that a plurality of such sleeves having socket connectors mounted therein may be provided in an integral block of insulating material to provide a terminal block, the fastenings of which are insulated from said connectors.

Further objects and features of the invention will be apparent from the following description of a preferred embodiment thereof, reference being made to the accompanying drawings, wherein

Fig. 1 is a front elevational view of the socket connector of the invention;

Fig. 2 is a cross-sectional side elevational view of the connector of Fig. 1 taken on the line 2—2 thereof;

Fig. 3 is a cross-sectional plan view of the connector of Fig. 1 taken on the line 3—3 of Fig. 2;

Fig. 4 is a cross-sectional plan view of the connector of Fig. 1 with its sheet metal member but partially inserted into its insulating sleeve;

Fig. 5 is an isometric view of the sheet metal member of the connector of Fig. 1 in its free position; and

Fig. 6 is a cross-sectional plan view of a plurality of connectors of this invention provided in an integral block.

Referring to the drawings, the novel socket connector of the invention includes in general two elements, a sheet metal member and a hollow sleeve element for receiving and retaining it. The sheet metal member itself is most clearly shown in Fig. 5 and consists of a piece of formed strip sheet metal having a base 12 with a pair of arms 14 bent up from the edges of said base. Preferably, arms 14 are flared outwardly somewhat in their free position (Fig. 5) so that the said arms will be pressed firmly against the insulating sleeve when inserted therein (Fig. 1 and Fig. 2). The free end portion of each arm 14 is bent inwardly back toward base 12 about a radius so that each end portion will be generally parallel to, yet suitably spaced from the remainder of said arm to provide a spring action, and each of such end portions is divided into a pair of spaced side portions 16 to permit limited springing movement of the side portions of each arm 14 toward each other. A lug 18 is provided adjacent the free end of each side portion 16, said lugs extending outwardly and preferably being of generally triangular shape

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with their sloping edges extending inwardly from the ends of the side portions.

A terminal 20 is mounted on the bottom surface of base 12 as by a rivet 22 and preferably extends somewhat beyond said base as at 24 to position the sheet metal member within its sleeve.

The hollow sleeve element for receiving and retaining the sheet metal member consists of a block 26 of insulating material having a generally rectangular through-passage 28 of substantially the same dimensions as is sheet metal member base 12, said passage terminating in faces 30 and 32 of block 26. A pair of grooves 34 are provided in opposite walls of said through-passage, said grooves terminating short of face 30 of block 26 to receive lugs 18 and provide a pair of stops therefor.

To assemble the above-described elements, the sheet metal member is inserted into the sleeve by pressing its arms 14 into the through-passage 28 at face 30 of insulating block 26. As said member is inserted, its side portions 16 are sprung together by the lugs 18 pressing on the sides of the through-passage short of the grooves 34 (Fig. 4) until said lugs pass into said grooves when the extended portion 24 of terminal 20 is substantially in contact with face 30 (Figs. 2 and 3). The arms 14 are then in firm pressure contact with the side of the passage 28 to press the bent-inwardly opposed side portions 16 into spring contact with one another. In such position, lugs 18 in grooves 34 at the ends thereof prevent movement of the sheet metal member relative to the insulating sleeve in a direction toward face 30, and the terminal portion 24 in contact with said face prevents movement of said member relative to said sleeve in a direction away from said face. Thus, the sheet metal member is locked in position in its insulating sleeve, although it may be removed therefrom by a tool suitable for springing side portions 16 toward one another sufficiently for lugs 18 to clear the walls of through-passage 28.

In Fig. 6 is shown a terminal block wherein a single block 36 of insulating material is provided with a plurality of through-passages having sheet metal members inserted therein as above described, and with two bores 38 for receiving suitable fastening elements.

With any of the above described structures, a spade connector 40 inserted between the bent-inwardly opposed side portions 16 is firmly, yet releasably, retained therebetween by the spring pressure provided by said side portions 16 and arms 14 against the surface of through-passage 28 in block 26.

It will be appreciated by those skilled in the art that various modifications may be made within the spirit of the invention and the scope of the appended claims, for instance, the terminal portion might well be made integral with the sheet metal member if so desired.

We claim:

1. A socket connector for receiving a flat spade terminal to provide an electrical connection therebetween comprising a generally U-shaped sheet metal member having a base and a pair of arms connected to and extending from opposite edges of said base, at least one of said arm having its free end portion bent inwardly back toward the other arm and said base so that it extends along and is spaced from said one arm, said end portion being divided to provide a pair of spaced side portions each having a lug extending outwardly, and a hollow sleeve of insulating material for said sheet metal member, said sleeve having a through-passage with a pair of grooves in opposite sides thereof terminating short of one face of said sleeve to provide a pair of stops, said sheet metal member being inserted in said sleeve from said one face with its arms in firm pressure contact with

the sides of said through-passage to receive and retain a spade terminal therebetween and with its lugs in said grooves to prevent movement of said member relative to said sleeve in a direction toward said one face.

2. A socket connector for receiving a flat spade terminal to provide an electrical connection therebetween comprising a generally U-shaped sheet metal member having a base and a pair of arms connected to and extending from opposite edges of said base, each of said arms having its free end portion bent inwardly back toward the other arm and said base so that it extends along and is spaced from said other arm, said end portions being divided to provide a pair of spaced arm portions each having a lug extending outwardly, and a hollow sleeve of insulating material for said sheet metal member, said sleeve having a through-passage with a pair of grooves in opposite sides thereof terminating short of one face of said sleeve to provide a pair of stops, said sheet metal member being inserted in said sleeve from said one face with its arms in firm pressure contact with the sides of said through-passage to receive and retain a spade terminal between its bent-inwardly end portions and with its lugs in said grooves to prevent movement of said member relative to said sleeve in a direction toward said one face.

3. A socket connector for receiving a flat spade terminal to provide an electrical connection therebetween comprising a generally U-shaped sheet metal member having a base and a pair of arms connected to and extending from opposite edges of said base and flaring outwardly therefrom in their free position, each of said arms having its free end portion bent inwardly back toward the other arm and said base so that it extends along and is spaced from said other arm, said end portions being divided to provide a pair of spaced arm portions each having a lug extending outwardly, and a hollow sleeve of insulating material for said sheet metal member, said sleeve having a through-passage with a pair of grooves in opposite sides thereof terminating short of one face of said sleeve to provide a pair of stops, said sheet metal member being inserted in said sleeve from said one face with its arms in firm pressure contact with the sides of said through-passage to press its bent-inwardly end portions into contact with one another to receive and retain a spade terminal therebetween and with its lugs in said grooves to prevent movement of said member relative to said sleeve in a direction toward said one face.

4. A socket connector for receiving a flat spade terminal to provide an electrical connection therebetween comprising a generally U-shaped sheet metal member having a base and a pair of arms connected to and extending from opposite edges of said base and flaring outwardly therefrom in their free position, each of said arms having its free end portion bent inwardly back toward the other arm and said base so that it extends along and is spaced from said other arm, said end portions being divided to provide a pair of spaced arm portions each having a lug extending outwardly, terminal means on said base extending beyond said base, and a hollow sleeve of insulating material for said sheet metal member, said sleeve having a through-passage with a pair of grooves in opposite sides thereof terminating short of one face of said sleeve to provide a pair of stops, said sheet metal member being inserted in said sleeve from said one face with its arms in firm pressure contact with the sides of said through-passage to press its bent-inwardly end portions into contact with one another to receive and retain a spade terminal therebetween and with its lugs in said grooves to prevent movement of said member relative to

said sleeve in a direction toward said one face, and said terminal means being positioned against said one face of said sleeve to prevent movement of said member relative to said sleeve in a direction away from said one face.

5. A socket connector for receiving a flat spade terminal to provide an electrical connection therebetween comprising a generally U-shaped sheet metal member having a base and a pair of arms connected to and extending from opposite edges of said base and flaring outwardly therefrom in their free position, each of said arms having its free end portion bent inwardly back toward the other arm and said base so that it extends along and is spaced from said other arm, said end portions being divided to provide a pair of spaced arm portions each having a generally triangular lug extending outwardly with its sloping edge extending inwardly from the end of each said arm portion, terminal means riveted to the bottom surface of said base in contact therewith and extending beyond said base, and a hollow sleeve of insulating material for said sheet metal member, said sleeve having a through-passage with a pair of grooves in opposite sides thereof terminating short of one face of said sleeve to provide a pair of stops, said sheet metal member being inserted in said sleeve from said one face with its arms in firm pressure contact with the sides of said through-passage to press its bent-inwardly end portions into contact with one another to receive and retain a spade terminal therebetween and with its lugs in said grooves to prevent movement of said member relative to said sleeve in a direction toward said one face, and said terminal means being positioned against said one face of said sleeve to prevent movement of said member relative to said sleeve in a direction away from said one face.

6. A socket connector block for receiving a plurality of flat spade connectors to provide an electrical connection therebetween comprising a plurality of generally U-shaped sheet metal members each having a base, and a pair of arms connected to and extending from opposite edges of said base and flaring outwardly therefrom in their free position, each of said arms having its free end portion bent inwardly back toward the other arm and said base so that it extends along and is spaced from said other arm, said end portions being divided to provide a pair of spaced arm portions each having a lug extending outwardly, terminal means on said bases in contact therewith and extending beyond said bases, and a block of insulating material for said sheet metal members, said block having a plurality of through-passages each with a pair of grooves in opposite sides thereof terminating short of one face of said sleeve to provide a pair of stops, said sheet metal members being inserted in said through-passages from said one face with their arms in firm pressure contact with the sides of said passages to press their bent-inwardly end portions into contact with one another to receive and retain spade terminals therebetween and with their lugs in said grooves to prevent movement of said members relative to said block in a direction toward said one face, and said terminal means being positioned against said one face of said block to prevent movement of said members relative to said block in a direction away from said one face.

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